

**REPLY UNDER 37 CFR 1.116  
EXPEDITED PROCEDURE  
EXAMINING GROUP 2874**

Serial No. 09/892,144  
Response dated March 27, 2003

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Docket No. 60.1413

Furthermore, as noted in column 6, lines 46-59, of Weis: "The response from any type of sensor (e.g. nuclear, electromagnetic, acoustic, pressure, temperature, torque, strain, etc.) is converted to an electrical signal which is applied to the piezoelectric crystal. ... This electrical output, when applied to the piezoelectrical crystal, deforms or perturbs the affixed Bragg grating". There is no teaching or suggestion in Weis that this "sensor" may be an intrinsic or extrinsic optical sensor. The fact that the sensor response in Weis is "converted to an electrical signal which is applied to the piezoelectric crystal" teaches away from using an intrinsic or extrinsic optical sensor for sensor element 331, 341, 351, or 361 in Weis.

As noted in column 10, lines 37-39, of Weis: "... the PZ crystal component 28 of the grating-PZ element 70 is affixed to the grating 38 by means of an adhesive or other suitable bonding material". The gratings in Weis do not act as intrinsic or extrinsic optical sensors that measure environmental effects. To properly perform their function, as described in the Weis reference, the gratings must be isolated from the local environment, such as by bonding the PZ crystal to the grating with an adhesive. Accordingly, because the Bragg gratings of Weis do not sense an environmental response independent of the non-optical sensor, they do not "inherently function as an optical sensor" and do not themselves "sense external conditions" distinct from the non-optical sensors as asserted by the Examiner. Therefore, Weis does not teach a telemetry system having an optical sensor and a non-optical sensor.

Applicant has disclosed and claimed a sensor-telemetry system that includes at least one optical sensor, at least one non-optical sensor, and an optical fiber coupled with the optical sensor and the non-optical sensor and arranged to carry signals outputted from the optical sensor and the non-optical sensor. As discussed above, this concept is not disclosed

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or suggested by the Weis reference. The Bragg gratings in Weis are not optical sensors and the optical fiber in Weis does not carry different electrical signals (i.e. different environmental responses), some output from Bragg gratings 330, 340, 350, and 360 and others output from non-optical sensors 331, 341, 351, and 361. A proper *prima facie* showing of anticipation has simply not been made in the Office Action. Reconsideration and withdrawal of this rejection is respectfully requested.

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Issuance of a Notice of Allowance in this case is respectfully requested. If the Examiner is contemplating any action other than allowance of claims 1-27, the Examiner is urged to contact Applicant's representative by telephone at 203-431-5506 or by email at [wbatzer@ridgefield.oilfield.slb.com](mailto:wbatzer@ridgefield.oilfield.slb.com) to discuss this case further and possibly to arrange a telephone interview.

In the event that a fee is due in connection with this Response, the Commissioner is hereby authorized to charge any underpayment to Deposit Account No. 19-0615.

Respectfully submitted,

By:

  
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The Office Action characterizes the Weis reference as disclosing “an oilfield monitoring system … comprising: a [sic] optical fiber … deployed in an oilfield; a plurality of optical sensors coupled with the optical fiber …; a plurality of non-optical sensors …; an [sic] at least one converter coupling at least one of the plurality of non-optical sensors with the optical fiber; wherein the pluralities of optical and non-optical sensors are deployed throughout the oilfield . . . . Although Weis does not explicitly state that the Bragg gratings optically sense the external conditions themselves without the aid of another device, the optical gratings inherently function as [sic] optical sensor to sense the external conditions.” Applicant disagrees with this characterization of the Weis reference and believes that the difference between an “optical sensor,” as this phrase is used in the present application, and a fiber Bragg grating element, such as those described in the Weis reference has not been appreciated.

As noted on page 1, lines 15-17, of the present application: “**Fiber optic sensors** have been developed to measure a number of environmental effects, such as position (linear, rotational), fluid level, temperature, pressure, strain, pH, chemical composition, etc. . . .” (emphasis added). The fiber Bragg gratings shown in Weis are not optical sensors because they are not configured to measure environmental effects independent of the non-optical sensors. Instead, the non-optical sensor generates an electrical signal in response to an environmental effect and the fiber Bragg gratings is part of an electro-optical data telemetry system that allows the electrical signal to be transmitted to the surface. The Bragg grating merely conveys the environmental response originally sensed by the non-optical sensor; there is no independent response to an environmental effect.